DETERMINING THE ROLE OF PLANT PATHOGENS IN THE COASTAL MARSH DIEBACK: LESSONS FROM AGRICULTURE AND FORESTRY

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We have begun isolating possible pathogens from *Spartina alterniflora* collected from sites adjacent to dieback-affected areas. Several fungi were recovered from roots and crowns of plants that showed early dieback symptoms but that had not succumbed. Included were species of *Fusarium*, common decay organisms, pythiaceous fungi, and as yet unidentified isolates. These fungi will be evaluated in extensive pathogenicity tests to determine if they cause symptoms similar to those associated with dieback. However, it must be emphasized that results from these tests will be preliminary and that attributing a syndrome (numerous symptoms) to a particular pathogen requires extensive experiments under environmental conditions that simulate the natural state. Furthermore, it is very likely that a combination of pathogens may be required to reproduce the entire syndrome, not all of which may be operative at the same time or in the same place. Determining the etiological agent(s), both biotic and abiotic, for these types of diseases (catastrophic diebacks) has been the bane of plant pathologists since the founding of the science.

Examples of the problems encountered with these types of decline diseases will be drawn from agriculture and forestry. Included will be such calamitous diseases as late blight of potato, which led to the establishment of the science of plant pathology, take-all and snow mold of wheat, Panama disease of banana, little leaf decline of pine, and the catastrophic jarrah forest dieback in Australia. Each of these diseases illustrates certain principles of plant pathology that are germane to the marsh dieback syndrome, and some were fraught with missteps that led to wrong conclusions and, in some cases, inappropriate government policies.